

Date: Tuesday, 22/05/2007 10:11:35 AM
 User: Linda Lacelle

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: X-TUBE 412
Job Number	: 32444	Part Number	: D412664145
Estimate Number	: 12783	Drawing Number	: D412-664-145 REV C
P.O. Number	: N/A	Project Number	: N/A
This Issue	: 22/05/2007	S.O. No.	: N/A
Prsht Rev.	: NC	Drawing Revision	: C
First Issue	: N/A	Material	: N/A
Previous Run	: 32443	Due Date	: 01/06/2007
Written By	: <u>L</u>	Qty:	1
Checked & Approved By	: <u>L</u>	Um:	Each
Comment	: Est Rev.A New Issue 07-02-14 JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :	
1.0	DC	DOCUMENT CONTROL	
		Comment: Photocopy bluefile & type labels per PPPD412-664-105	CHG 001 <i>8/8/07/05/25</i>
2.0	D6019128	Crosstube Material	
		Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s) Pick: Qty Part number Description Batch 1 D6019-128 Crosstube <i>B29369</i> Check OD = 2.7500"; ID =	<i>8/8/07/05/25</i>
3.0	MORI SEIKI	MORI, SEIKI CNC LATHE LARGE	
		Comment: 1-TURN AS PER FOLIO FA689 & DWG D412-664-145 , FOLIO REV: <i>A</i> DWG REV: <i>C</i>	<i>8/8/07/05/25</i>
		2-DEBURR AS REQUIRED	<i>8/8/07/05/25</i>
4.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE	
		Comment: INSPECT PARTS AS THEY COME OFF MACHINE	<i>8/8/07/05/25</i>
5.0	QC8	SECOND CHECK	
		Comment: SECOND CHECK	<i>9/8/07/05/28</i>

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

Date: Tuesday, 22/05/2007 10:11:36 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE 412

Job Number: 32444

Part Number: D412664145

Job Number:



Seq. #: Machine Or Operation:

Description :

14.0 HAND FINISHING1 HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat Tube as per QSI 005 4.1

JB 7-6-25

15.0 QC3 INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

16.0 QC5 INSPECT WORK TO CURRENT STEP



JB 7-6-26 0



Comment: INSPECT WORK TO CURRENT STEP

17.0 OUTSIDE SERV.10 OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 0380R

Issue P/O: 4043 LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

c207106126 0

18.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage

Ensure copy of NDT results attached to work order.

7/6/28 6

19.0 QC5 INSPECT WORK TO CURRENT STEP



Comment: Inspect for damage & ensure results are as per Dwg D412-664-203

EN 07/07/03 (X)

20.0 SPRAY PAINTING SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

{ 07-07-09

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Drawing Name: X-TUBE 412

Job Number: 32444

Part Number: D412664145

Job Number:



Seq. #:	Machine Or Operation:	Description :
21.0	QC14	INSPECT SPRAY PAINT
22.0	D31893	Chafing Shield
23.0	D3595	Rubber Cushion (per sq ft)
24.0	D28931	Support
25.0	D2856600	Abrasion Strip
26.0	MS2192024	Clamp(per MIL-DTL-8783C)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Date: Tuesday, 22/05/2007 10:11:36 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE 412

905

Job Number: 32444

Part Number: D412664145

Job Number:



Seq. #:	Machine Or Operation:	Description :
27.0	MS2192025	Clamp(per MIL-DTL-8783C)
		Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s) Clamp(per MIL-DTL-8783C) Batch: 103897
		8T 07 08 16
28.0	LANDING GEAR 1	LANDING GEAR RESOURCE 1
		Comment: LANDING GEAR RESOURCE 1 Assemble as per Dwg D412-664-145
		Install Chaffing Sheild
		Instal supports with magnobond 6398 per dwg D412-664-245, cure for 12hrs before packaging.
		Time & date of application: 4:00 07-08-16 Batch: 104723
		8T 07-08-16
29.0	QC5	INSPECT WORK TO CURRENT STEP
		Comment: INSPECT WORK TO CURRENT STEP
		Cr 07/08/17
30.0	PACKAGING 1	PACKAGING RESOURCE #1
		Comment: PACKAGING RESOURCE #1 Identify and pack for shipping as per PPP D412-664-105
		*****Ensure tube is not packaged if curing time is less than 12 hrs, see step 26 for application time & date *****
		Time & date of packaging: _____
		Location: PPP 32187 PPP Rev: PPP 07/08/17
31.0	QC21	FINAL INSPECTION/W/O RELEASE
		Comment: FINAL INSPECTION/W/O RELEASE
		107.08.17
		Job Completion
		U 07.08.17

W/O:		WORK ORDER CHANGES					
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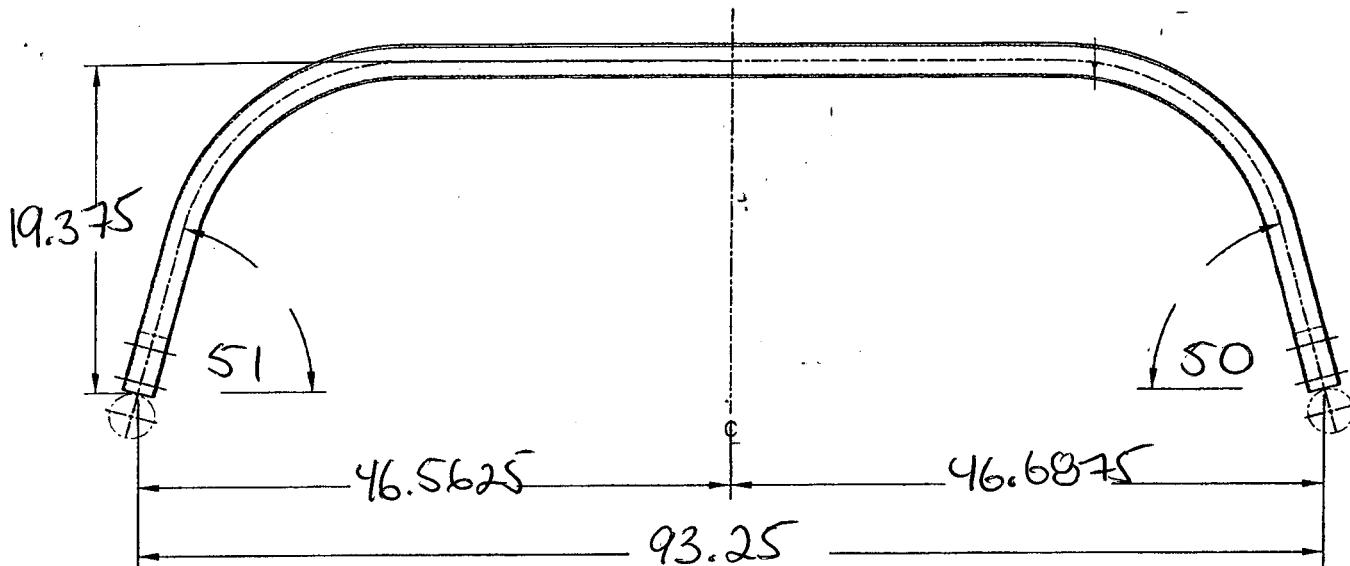
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	32444
Description: Crosstube Low Narrow Fwd (412)	Part Number:	D412-664-105
Inspection Dwg: D412-664-145 Rev: C		Page 1 of 1

Required Dimension	Min	Max
Height	19.23	19.49
1/2 Span	46.47	46.73
Angle	49°	52°
Total Span	92.94	93.46



Comments

QC15 Inspection	<i>J</i>
Date	<i>0705-04</i>

Rev	Date	Change	Revised by	Approved
A	07.04.27	New Issue	KJ/JM <i>[Signature]</i>	<i>[Signature]</i>

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NOTE: Date & initial all entries

DART

DESIGN <i>QP</i>	DRAWN BY <i>QP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[initials]</i>	APPROVED <i>[initials]</i>	DRAWING NO. D412-664-145	REV. C SHEET 1 OF 3
DATE 07.03.29		TITLE CROSSTUBE ASS'Y (412 LOW-N FWD) NTS	SCALE
A	06.12.21	NEW ISSUE	
B	07.03.01	CHG RUBBER CUSHION	
C	07.03.29	CHG CLAMP & RUBBER CUSHION LGTH.	

RELEASED07.04.24 *[initials]***PARTS LIST:**

Qty	Part Number	Description
X	D412-664-145	CROSSTUBE ASSEMBLY (412 LOW-NARROW FWD)
1	D6019-128	CROSSTUBE
1	D2856-250-842	ABRASION STRIP
2	D2893-1	SUPPORT
1	D3189-3	CHAFING SHIELD
4	D3595-063-450	RUBBER CUSHION
2	MS21920-24	CLAMP
4	MS21920-25	CLAMP (OR MS21920-26)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 32444
- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
 - 2) MATERIAL: MANUFACTURED FROM D6019-128
FINISHED LENGTH = 124.48 ± 0.020 (BEFORE BENDING/TRIMMING)
 - 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART 005 4.2
 - 4) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR D3189-3 CHAFING SHIELD AND ASSOCIATED HARDWARE.
 - 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
 - 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
 - 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
 - 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
 - 9) INSTALL D2856-XXX-YYY ABRASION STRIPS WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
 - 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
 - 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
 - 12) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
 - 13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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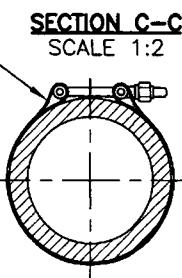
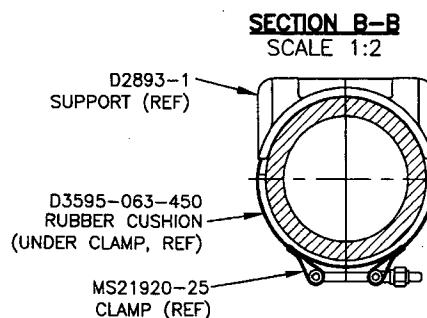
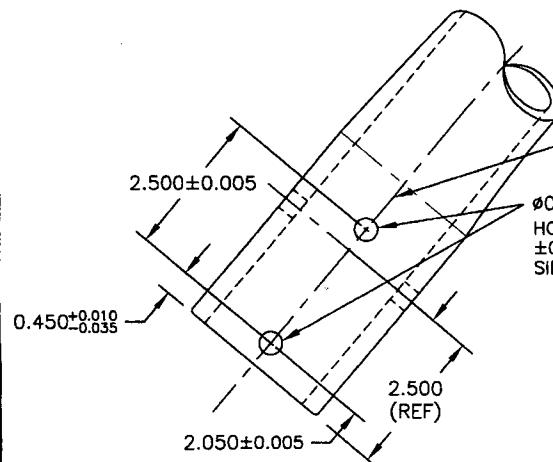
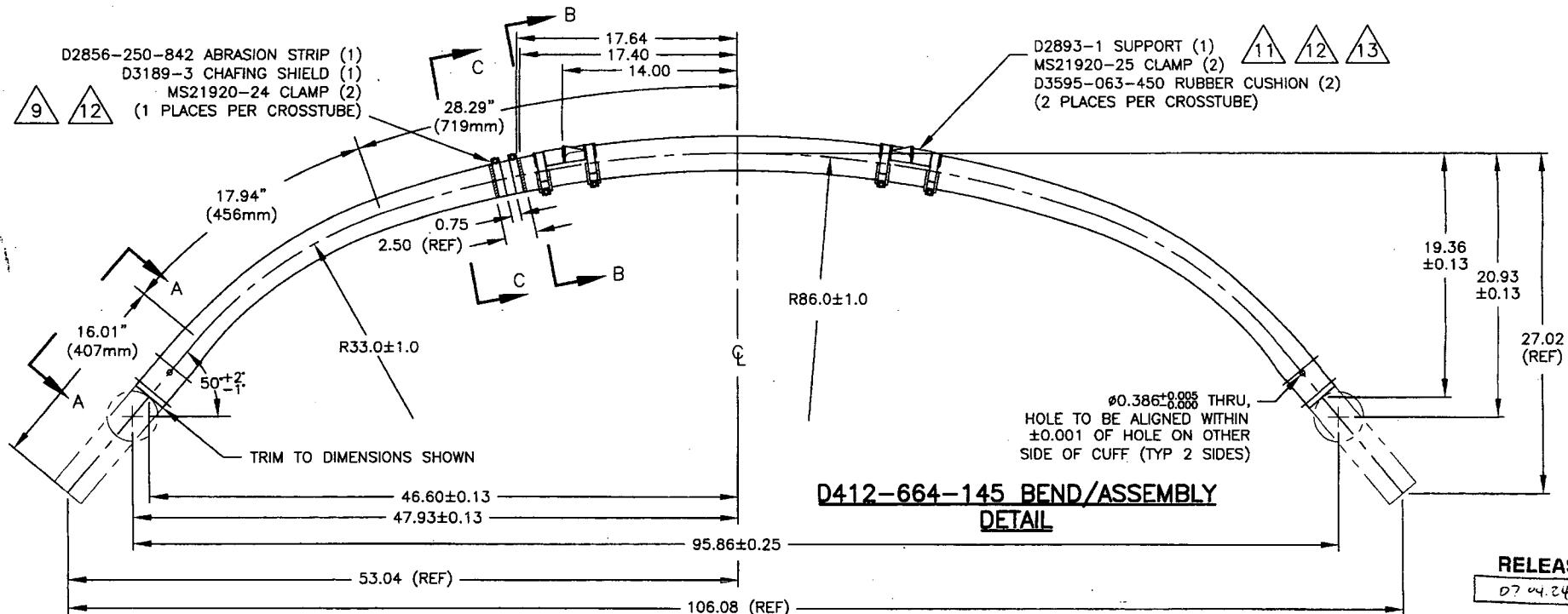
NOTE: Date & initial all entries

D2856-250-842 ABRASION STRIP (1)
 D3189-3 CHAFING SHIELD (1)
 MS21920-24 CLAMP (2)
 (1 PLACES PER CROSSTUBE)

9 12

D2893-1 SUPPORT (1)
 MS21920-25 CLAMP (2)
 D3595-063-450 RUBBER CUSHION (2)
 (2 PLACES PER CROSSTUBE)

11 12 13



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1:8

DESIGN	DRAWN BY	DART	DART AEROSPACE LTD. HANDBURY, ONTARIO, CANADA
CHECKED	APPROVED		DRAWING NO. D412-664-145 REV. C SHEET 2 OF 3
DATE		TITLE	CROSSTUBE (412 LOW-NARROW FWD)

07.03.29

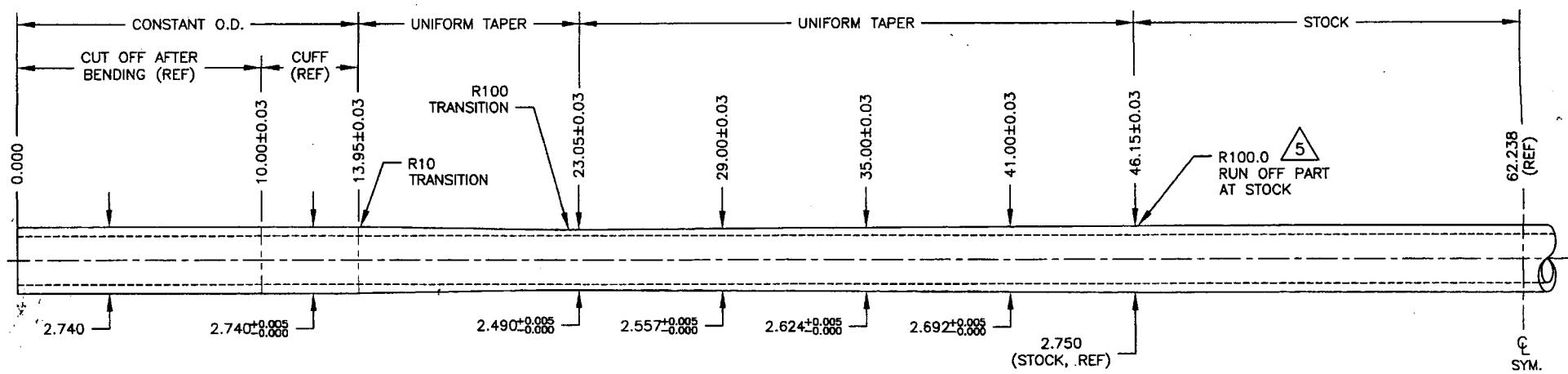
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D412-664-145 MACHINING DETAIL

RELEASED
07.04.19

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		DATE 07.03.29	TITLE CROSSTUBE (412 LOW-NARROW FWD)			SHEET 3 OF 3	SCALE 1:4

W/O:		WORK ORDER CHANGES						
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DART AEROSPACE LTD

Work Order:

Description: Crosstube Assembly

Part Number: D412664145

Inspection Dwg: D412664145 Rev: C

Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

 First Article Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
2.740	+0.005 -0.000	2.745	/			
2.740	"	2.745	-			
2.490	"	2.494	-			
2.557	"	2.561	/			
2.624	"	2.628	-			
2.692	"	2.694	/			
2.750	"	2.751	/			
SIDE A						
SIDE B						
2.740	"	2.745	-			
2.740	"	2.745	-			
2.490	"	2.494	-			
2.557	"	2.561	-			
2.624	"	2.628	-			
2.692	"	2.694	-			
2.750	"	2.751	-			
124.476	+0.030	124.476	-			

Measured by: J.S.
 Date: 07/05/28

Audited by: gml
 Date: 07/05/28

Prototype Approval: N/A
 Date: N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	



HeathAir

INTERNATIONAL (1991) INC.

681 Ave. Lepine, Dorval, Québec H9P 1G3
Tél.: (514) 636-1000 • Fax: (514) 636-0031

W.O. № 36761

A.M.O. Number: 46/90

NON-DESTRUCTIVE TESTING REPORT

AIRCRAFT / COMPONENT INFORMATION

REGISTRATION:

MODEL/TYPE:

SERIAL NUMBER:

TOTAL HR/LDG:

OPERATED BY:

BASED AT:

INSPECTION REQUIREMENTS

Carry out EPI of six (6) cross tubes (external surface) as per ASTM E-1417-05 and the Dart QSI 038, Section 4.1.1 (on file at client) - parts delivered to HeathAir.

Qty. (2) P/N D412-664-146 S/N's B32444 & B32443
Qty. (2) P/N D206-667-203 S/N's B32143 & B32144
Qty. (1) P/N D206-667-103BL S/N B32666
Qty. (1) P/N D206-667-101 S/N B26378

 RADIOGRAPHY ULTRASONIC PENETRANT MAGNETIC PARTICLE EDDY CURRENT

INSPECTION REPORT

Fluorescent penetrant inspection was performed in accordance with the above requirements on six (6) cross tubes.

Note: A Level 3 penetrant was substituted for the requested Level 2 (3 is more sensitive)
Ardrox 970P25E Batch #04B503.

Five (5) cross tubes PASSED inspection and one (1) FAILED inspection, P/N D206-667-203, S/N B32144.

THE MAINTENANCE DESCRIBED ABOVE HAS BEEN PERFORMED IN ACCORDANCE WITH
THE APPLICABLE STANDARDS OF AIRWORTHINESS

INSPECTED BY:

DATE: June 26, 2007

INSPECTION STAMP(S): Not Required

CUSTOMER: Dart Aerospace

CUSTOMER INFORMATION

ADDRESS:

P.O. NUMBER:

CONTACT NAME:

LABOUR	@	\$
MATERIALS	@	
TRAVEL EXPENSES	@	GST
HOTEL EXPENSES	@	PST

INVOICE NO.

TOTAL \$